

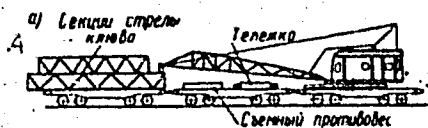
All-Purpose Self-Propelled Tower-Boom Cranes

3/100/60/000/003/002/003
A053/A026

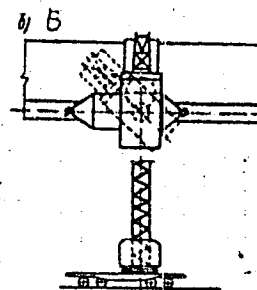
carrying out from beginning to end the entire complex assembly work, starting with the heavy elements on low and medium heights and finishing with the comparatively lighter elements at great heights. They are also easier to be transported and assembled than tower cranes. Cranes of the class SKG are transported on trailers in three sections. (Fig. 6) The tower-boom cranes have a Diesel-electric power equipment with the possibility of taking power from outside sources. It can be anticipated that tower-boom cranes will meet with a great demand in future. There are 6 figures and two tables.

Figure 6: Transportation and assembly of Crane SK-300

A) crane in position for RR transportation



B) intermediate platform with crane



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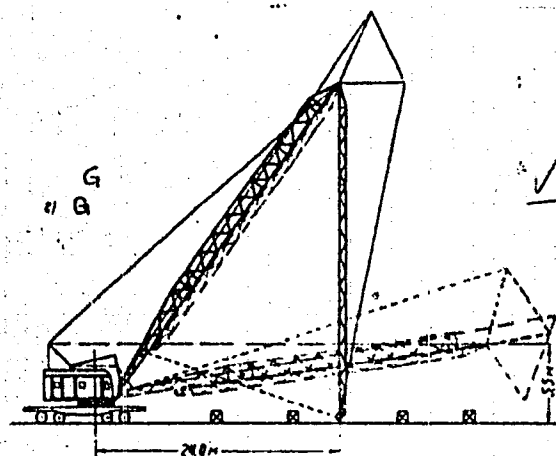
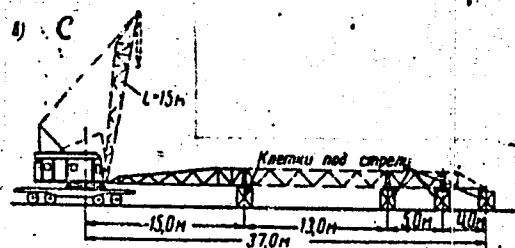
All-Purpose Self-Propelled Tower-Boom Cranes

S/100/60/000/003/002/003
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Figure 6:

C) assembly of crane on supporting
cribs along track

G) lifting up of crane by means of
tackle blocks



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All-Purpose Self-Propelled Tower-Boom Cranes

S/100/60/000/003/002/003
A053/A026

Figure 6:

D) crane in working position with
40 m boom and 28.9 m beak.

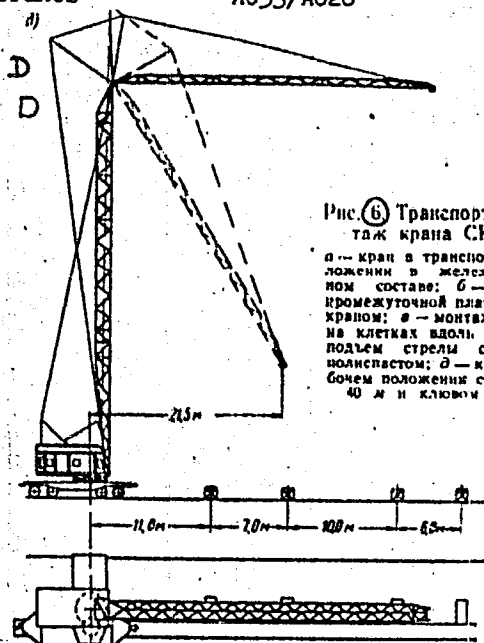


Рис. 6 Транспорт и монтаж крана СК-300

а — кран в транспортном положении в железнодорожном составе; б — разворот промежуточной платформы с краном; в — монтаж стрелы на клетках вдоль пути; г — подъем стрелы стреловым полнспастом; д — кран в рабочем положении со стрелой 40 м и клювом 28,9 м

Card 5/5

BOLOBAN, Nikolay Aleksandrovich, kand. tekhn. nauk; KHODOV, M.P., inzh.
red.

[Technical characteristics of building and assembly cranes of the
U.S.S.R.] Tekhnicheskie kharakteristiki stroitel'no-montazhnykh
kranov SSSR. Moskva, Gos.izd-vo lit-ry po stroit., arkhitekt. i stroit.
materialam, 1961. 44 p. (MIRA 14:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organiza-
tsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. Byuro
tekhnicheskoy informatsii. 2. Starshiy nauchnyy sotrudnik Nauchno-
issledovatel'skogo instituta organizatsii, mekhanizatsii i tekhnicheskoy
pomoshchi stroitel'stvu Akademii stroitel'stva i arkhitektury
SSSR (for Boloban).

(Cranes, derricks, etc.)

STRASHKO, A.Ya., inzh.; KHODOV, M.P.

New SKG-50 assembling crane. Mont. i spets. rab. v stroi. 23
no. 2:7-11 F '61. (MIRA 14:1)

1. Glavstal'konstruktsiya i Proyektnyy institut Promstal'-
konstruktsiya.

(Cranes, Derricks, Etc.)

SOKOLOVA, Anna Dmitriyevna, kand. tekhn. nauk; KOROBOV, Viktor
Mikhaylovich, inzh.; KHODOV, Mikhail Petrovich, inzh.;
Prinimal uchastiye SIVITSKIY, Ye.S., inzh.

[Lifting, conveying, and tackling equipment for assembling
structural elements] Pod'emno-transportnoe i takelazhnoe
oborudovanie dlia montazha stroitel'nykh konstruktsii.

3. izd., perer. Moskva, Stroiizdat, 1964. 326 p.

(MIRA 18:3)

OKOROKOV, A.A., otv. red.; MARKIN, A.M., otv. red.;
BENEZOVSKIY, V.I., red.; DOLGUSHIN, N.I., red.;
KIRILLOV, I.Ye., red.; MIKHAYLOV, G.N., red.;
NEVZOROV, L.A., red.; NIKOLAYEVSKIY, G.M., red.;
ROZHDESTVENSKIY, V.A., red.; USHAKOV, P.N., red.;
KHODOV, M.P., red.; SHARONOV, M.S., red.

[Regulations for the design and safe operation of load-
lifting cranes] Pravila ustroystva i bezopasnoi ekspluata-
tsii gruzopod'emnykh kranov. Moskva, Nedra, 1965. 127 p.
(MIRA 18:7)

1. Russia (1917.. R.S.F.S.R.) Gosudarstvennyy komitet po
nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i
gornomu nadzoru.

KHODOV, M.P.; POLYASHCHUK, L.A.

The SKG-40 crawler-type diesel-electric crane. Stroi. i dor. mash.
10 no.10:9-11 0 '65. (MIRA 18:10)

L 8220-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) MJW/JD/WB

ACC NR: AP5025597

SOURCE CODE: UR/0129/65/000/010/0035/0036

AUTHOR: Khodov, V. V.

ORG: none

TITLE: Hot-dip aluminizing of EI867 alloy

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1965, 35-36, and bottom half of insert facing p. 24

TOPIC TAGS: high alloy steel, steel, aluminizing, aluminum plating, aluminized steel, steel oxidation resistance/EI 867 steel

ABSTRACT: The conditions of hot-dip aluminizing of EI867 steel have been studied. After degreasing and oxidizing, steel specimens were immersed into a flux bath for 10 min, withdrawn, immersed into a 700C hot aluminum bath for 30 sec, and withdrawn at different rates of speed. A rate of 50 cm/min yielded the best results and was used in the rest of the test. Aluminized specimens were then diffusion annealed at 850 to 1200C. The total thickness of the aluminized layer after diffusion annealing varied from 150 to 250 μ depending on the temperature and the duration of annealing. Surface porosity was observed in specimens annealed at 850C or 950C, but no porosity was found in specimens annealed at 1050C or 1200C. Annealing at 850—950C for 2 hr produced the highest hardness, 850—930 HV. The most oxidation-resistant part of the aluminized layer is located at a depth of 75—125 μ . Orig. art. has: 3 figures and 2 tables.

[ND]

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UDC: 621.785.53:669.14.018.45

L 8220-66

ACC NR: AP5025597

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722120017-9"

SUB CODE: 11/ SUBM DATE: none/ ATD PRESS: 4148

Card 2/2

KHONOV, Ye.M.

Device for automatic electronic adjustment of precision pairs.
Pribozastroenie no.11:18-20 N '64. (MIRA 18:1)

KHODOV, Ye.M., inzh.

Technological relationship between the automation of part
machining and of the assembly of precision units. Vest.
mashinostr. 45 no.8:47-50 Ag '65.

(MIRA 18:12)

U S S R

The temperature relation of adiabatic expansion
of a gas is given by the equation
$$T_1 V_1^{\gamma} = T_2 V_2^{\gamma}$$

where T_1 and T_2 are the initial and final
temperatures, V_1 and V_2 are the initial and final
volumes, and γ is the adiabatic exponent.

For a diatomic gas, $\gamma = 1.4$. If the initial
temperature is T_1 and the initial volume is V_1 ,
then the final temperature T_2 and final volume V_2
are given by the equation
$$T_2 = T_1 \left(\frac{V_1}{V_2} \right)^{\gamma}$$

For a monatomic gas, $\gamma = 1.67$. If the initial
temperature is T_1 and the initial volume is V_1 ,
then the final temperature T_2 and final volume V_2
are given by the equation
$$T_2 = T_1 \left(\frac{V_1}{V_2} \right)^{\gamma}$$

For a polyatomic gas, γ is between 1.1 and 1.3.
If the initial temperature is T_1 and the initial
volume is V_1 , then the final temperature T_2 and
final volume V_2 are given by the equation
$$T_2 = T_1 \left(\frac{V_1}{V_2} \right)^{\gamma}$$

K HEDOK, 2.2

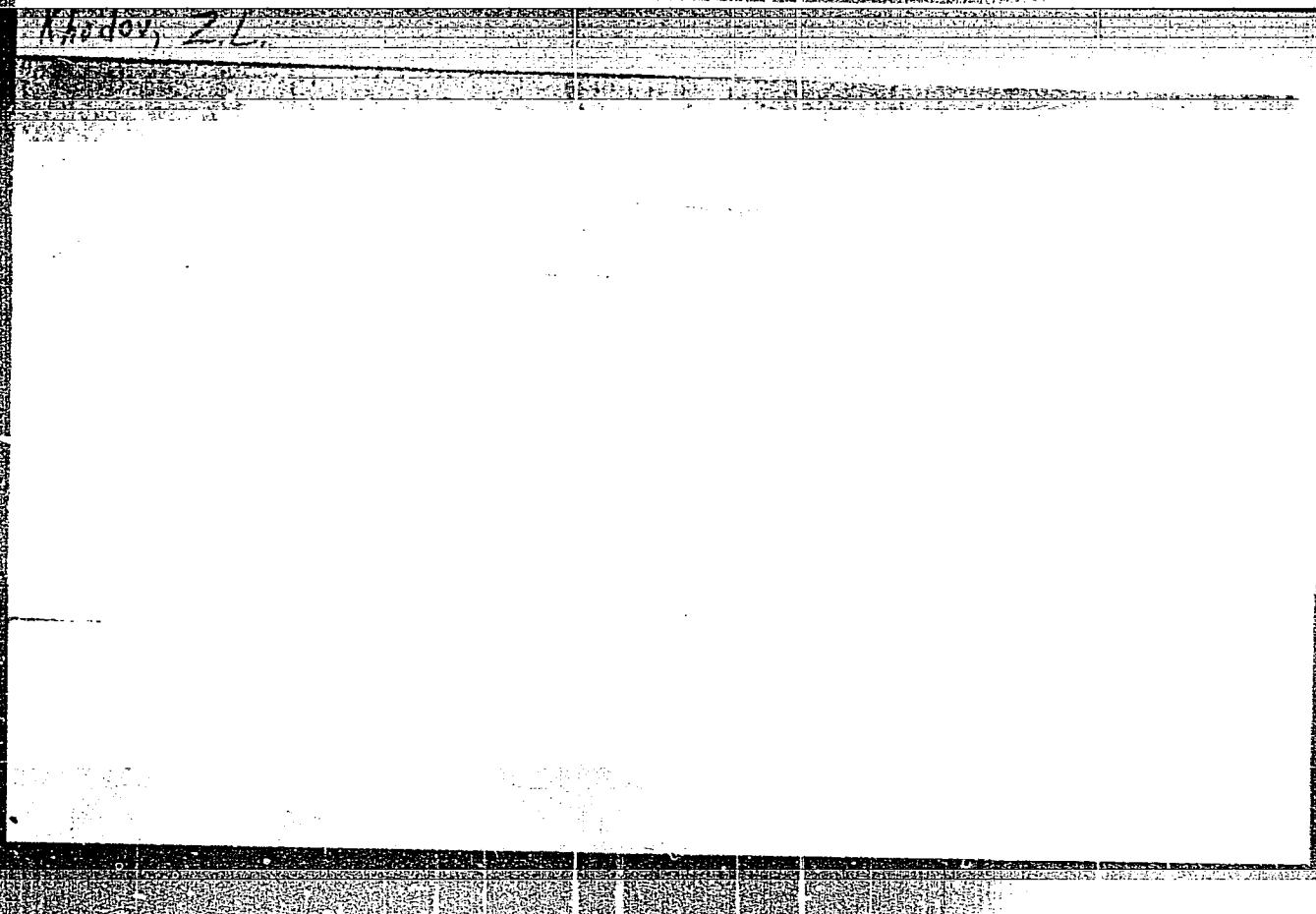
USS L.

Effect of supersonic vibrations on the quartz

The effect of supersonic vibrations on the quartz was measured calorimetrically and was approx 10.7 w. (measured calorimetrically)

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000722120017-9



APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000722120017-9"

KHODOV, Z.L.

124-58-6-6403

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 6, p 16 (USSR)

AUTHORS: Polotskiy, I.G., Khodov, Z.L.

TITLE: Ultrasonic-wave Propagation Velocity in Some Binary Fluid Systems and Their Compressibility (Skorost' ul'trazvuka v nekotorykh dvoynnykh zhidkikh sistemakh i ikh szhimayemost')

PERIODICAL: Sb. nauchn. rabot labor. metallofiziki AN UkrSSR, 1954, Nr 5, pp 34-44

ABSTRACT: Measurements were made of the velocity of sound with an ultrasonic interferometer at temperatures of 20-50°C (in the range of concentration from 0 to 100%), and the compressibility was calculated for a number of binary fluid systems in which reactions between like molecules differed from those between unlike molecules. Investigated were the following four systems: 1) a benzene-toluene system in which the forces of reaction between like molecules were approximately identical with those of reactions between unlike molecules; 2) an allyl-mustard-oil/piperidine system in which the components reacted chemically amongst themselves; 3) a chloroform/ethyl-ether system in which the forces of reaction between unlike molecules greatly

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124-58-6-6403

Ultrasonic-wave Propagation Velocity in Some Binary Fluid (cont.)

exceeded those of reactions between like molecules; 4) a benzene-nitrobenzene system in which the associated component dissociated. In the benzene-toluene system the compressibility isotherms had a weakly expressed maximum. It is assumed that this is related to the fact that the reactions between unlike molecules were somewhat less vigorous than those between like molecules. In the benzene-nitrobenzene system the speed of sound was a linear function of the concentration. In the chloroform/ethyl-ether system the dependence on concentration of the speed of sound was likewise nearly linear. The compressibility isotherms of the allyl-mustard-oil/piperidine system had a clearly identifiable minimum at temperatures of 25 and 50°. The presence of the minimum was an indication of a powerful reaction between the system components. The point is made that the study of the adiabatic compressibility of binary fluid systems has made it possible to arrive at certain conclusions concerning the nature of the interaction between the molecules. Bibliography: 23 references.

1. Ultrasonic radiation--Velocity
2. Ultrasonic radiation--Propagation
3. Liquids--Ultrasonic properties
4. Liquids--Physical properties

I. G. Mikhaylov

Card 2/2

KHODOV, Z.L.; HENIYEVA, T.Ya.

Determination of the specific electric resistance of the E1262,
RPI and St.5 steel varieties in the process of heating and cooling.
Trudy Inst.chern.met. vol.8:84-88 '54. (MLRA 7:12)
(Steel alloys--Electric properties) (Electric resistance)

KHODOV, Z. L., POLOTSKIY, I. G.

"Ultrasonic Interferometer for Measurements at High Temperatures"

an article in the book "Questions on the Physics of Metals and Metal Science", AS Ukr. SSR, Kiev, 1955, 151 pp.

So: Sum, No. 1102, 19 Oct 56

KHODOV, Z. L. and POLOTSKIY, I. G.

"Investigation of the Velocity of Ultrasound and Adiabatic Compressibility for Certain Liquids With Various Characters of the Bond", a paper presented at the second conference on the Liquid State of Matter, Kiev, 30 May to 3 June 1955, Usp. Fiz. Nauk, April 1955

Khodny S /

KHODOV, Z. I.

"Ultrasound Velocity in Binary Liquid Alloys Bi-Cd and BiPb."

paper presented at the 4th All-Union Conf. on Acoustics, Moscow, 26 May - 2 Jun 58.

POLOTSKIY, I.G.; BENIYEVA, T.Ya.; KHODOV, Z.L.

Effect of alloy elements on the temperature relation of elasticity
modulus in nickel and nichrome alloys. Issl. po zharopr. splav.
3:310-324 ' 58. (MIRA 11:11)

(Nickel alloys--Testing) (Elasticity)

(Metals, Effect of temperature on)

Khodov, Z.L.

AUTHORS: Polotskiy, I.G., and Khodov, Z.L.

46-4-2-11/20

TITLE: Ultrasound Velocity in Liquid Tin-Bismuth Alloys and Their Compressibility (Skorost' ul'trazvuka v zhidkikh splavakh olovo-vismut i ikh szhimayemost')

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol IV, Nr 2, pp 184-186 (USSR)

ABSTRACT: Dependence of the ultrasound velocity and adiabatic compressibility on concentration was measured in sub-eutectic and trans-eutectic liquid tin-bismuth alloys at temperatures of 10-15°C above the melting point. The ultrasound velocity and adiabatic compressibility were obtained also at 300°C. The adiabatic compressibility was calculated from the ultrasound velocity and the literature data on tin-bismuth and their liquid alloys' densities (Refs 6, 7). For certain composition ^{the} density was calculated by interpolation. The ultrasound velocity was measured by a pulse method. The method used (developed at the Institute of Metal Physics of the Academy of Sciences of the Ukrainian S.S.R.) differs from that described in Refs 2-4 in that the measurements were made by displacement of the reflector and determination of the time necessary to travel

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46-4-2-11/20

Ultrasound Velocity in Liquid Tin-Bismuth Alloys and Their Compressibility

the additional path. To avoid oxidation of the liquid alloys studied their surface was covered by a layer of paraffin wax. To improve the contact between the rod transmitting the ultrasonic pulses and the liquid alloys, the rod was covered by a thin layer of paraffin wax. A table on p. 185 gives the measured values of the ultrasound velocity (α , in m/sec, third column of the table) and adiabatic compressibility (β , in $10^{-12} \text{ cm}^2/\text{dyn}$, fourth column). The first column of the table gives the composition in atomic per cent of bismuth and the last two columns give α and β at 300°C. A figure on p. 186 shows the ultrasound velocity (two straight lines) and the compressibility (two slightly convex curves) of Sn-Bi alloys as a function of composition expressed in atomic per cent of Bi. With increase of Bi content the ultrasound velocity decreases linearly and the adiabatic compressibility increases. For each of these two quantities a distinct break occurs at the eutectic point, near 40% Bi. The presence of these breaks indicates structural changes in the liquid alloy on transition to the eutectic composition. At this composition a quasi-eutectic structure was reported to exist in liquid phase (Ref 9). Since on increase of temperature from 150 to 300°C the ultrasound velocity and the adiabatic compressibility of the eutectic composition alloy do not change, the authors conclude

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POLOTSKIY, I.G. [Pelets'kiy, I.H.]; KHODOV, Z.L.; LEVIN, G.I. [Levin, H.I.]

Effect of oxygen impurities and alloying additions on the elastic properties and internal friction of chromium [with summary in English].
Ukr. fiz. zhur. 4 no.1:116-121 Ja-F '59. (MIRA 12:6)

1. Institut metalofiziki AN USSR.
(Chromium alloys) (Oxygen)

AUTHORS: Polotskiy, I.G., Taborov, V.F. and SOV/46-5-2-12/34
Khodov, Z.L.

TITLE: Apparatus for Measurement of Ultrasound Velocity in Liquid Metals (Ustanovka dlya izmereniya skorosti ul'trazvuka v zhidkikh metallakh)

PERIODICAL: Akusticheskiy zhurnal, 1959, Vol 5, Nr 2, pp 202-205 (USSR)

ABSTRACT: The paper describes a new method of measurement of ultrasound velocity in liquid metals and alloys. The method is based on measurement of the time of travel of a short ultrasonic pulse between a source and a reflector which can be moved about in the liquid metal. In this way sound velocity can be measured with an accuracy of 0.3%. The metal was placed in a 30 mm diameter, 50 mm high heated quartz tube (Fig.1). The tube was closed from below by a transmitting rod 2 (40 mm diameter, 110 mm high). A polished hollow quartz reflector 4 was placed in the metal and its motion was controlled to within 0.005 mm by a micrometer 5. The molten metal was covered by a layer of paraffin to prevent oxidation. Good contact between the rod 2 and the metal was achieved by

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SOV/46-5-2-12/34

Apparatus for Measurement of Ultrasound Velocity in Liquid Metals

placing a thin layer of wax on top of the rod. The rod 2 was excited by a piezo-quartz plate (1 Mc/s working frequency) kept at a constant temperature by means of a water-cooled jacket. Pulses reflected from the upper end of the transmitting rod (pulse 2 in Fig.3) and from the reflector (pulse 3 in Fig.3) were displayed on a c.r.o. screen. The oscillator circuit supplying the quartz plate was based on a thyratron TG 0.1/L.3 (Fig.5). The apparatus was checked by measuring sound velocity in water: the value obtained agreed with Mikhaylov's value (Ref.6) to within 0.1%. Then the apparatus was used to measure sound velocities in liquid tin, bismuth, cadmium and lead at 10 - 15°C above their respective melting points. The values found were: Sn, $c = 2454 \text{ m/sec}$ at 247°C; Bi, $c = 1663 \text{ m/sec}$ at 285°C; Cd, $c = 2215 \text{ m/sec}$ at 335°C; Pb, $c = 1834 \text{ m/sec}$ at 340°C. The results for Bi, Cd and Pb agree with those reported by other workers (Refs.1-3). Sound velocity in Sn differs from the values reported earlier. There are 5 figures, 1 table and 6 references, of which 2 are Soviet, 3 English and 1 translation from English into Russian.

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SOV/46-5-2-12/34

Apparatus for Measurement of Ultrasound Velocity in Liquid Metals

ASSOCIATION: Institut metallofiziki AN USSR Kiyev (Institute of
Metal Physics, Ac. Sc. Ukr.SSR, Kiyev)

SUBMITTED: October 25, 1957

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24(6), 18(6)

AUTHORS: Polotskiy, I. G. and Khodov, Z. L. SOV/126-7-2-17/39

TITLE: Temperature Dependence of the Modulus of Shear and Internal Friction of a Few Nickel-Base Alloys
(Temperaturnaya zavisimost' modulya sdviga i vnutrennego treniya nekotorykh splavov na nikelevoy osnove)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 2, pp 274-277 (USSR)

ABSTRACT: Within the last few years a series of papers has appeared which is devoted to the study of the modulus of shear and internal friction of metals and alloys. The investigations carried out by Ke (Refs 1-5), Nowic (Refs 6 and 7), Finkel'shteyn (Refs 8 and 9) and Posunikov (Refs 10 and 11) are of great interest. The authors of this paper have investigated the temperature dependence of the modulus of shear and internal friction of nickel-molybdenum alloys, as well as nicrome with additions of titanium and aluminium. In this work the torsional oscillation method has been used. The
Card 1/5 difference between the method used by the authors and

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Temperature Dependence of the Modulus of Shear and Internal Friction
of a Few Nickel-Base Alloys

that described by other investigators (Refs 8-10) consists in the application of an electronic measuring device for the determination of the period of torsional oscillation. The measurements were carried out as follows (see Fig 1): a beam of light passing through a narrow slit falls on a mirror, which reflects it onto a screen behind which there is a photoelectric cell. As the rays pass through the slit in the screen, a stress impulse forms at the entrance to the starter mechanism, which is so arranged that its time of action is equal to four periods of torsional oscillation. During this time the electronic measuring device counts the number of oscillations of a quartz generator working at a frequency of 2.5 kilocycles. This enables the period of torsional oscillation to be determined with an accuracy of up to a tenth of a milli-second. For the determination of the absolute value of the modulus of shear, the periods of oscillation of the system were measured at two different magnitudes of moment of inertia, corresponding to two different positions of the load on the torsion rod. The modulus for nickel alloys at

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Temperature Dependence of the Modulus of Shear and Internal Friction
of a Few Nickel-Base Alloys

various temperatures has been worked out. Experimental nickel-molybdenum alloys, as well as nichrome-aluminium and nichrome-titanium alloys, were made in a high frequency furnace in an argon atmosphere. The purity of the raw materials was: nickel - 99.99%, molybdenum - 99.93%, aluminium 99.95%, titanium - 99.6% and chromium - 98.5%. From each alloy a 500 g ingot was cast. The ingots were forged into rods of 8 mm diameter, after which they were drawn into wire of 0.8 mm diameter. The chemical composition of the nickel alloys investigated is shown in the Table, p 275. In order to determine the modulus of shear and internal friction, wire specimens, 0.8 mm diameter and 330 mm long, were made. All measurements were taken in vacuum. The alloys were investigated in the annealed condition. For heat treatment the specimens were sealed in a quartz tube, from which air was pumped out until a vacuum of 10^{-3} mm Hg col. was attained. The nickel-molybdenum alloys were given the following annealing treatment: the specimens were heated to 1200°C

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Temperature Dependence of the Modulus of Shear and Internal Friction of a Few Nickel-Base Alloys

and soaked at this temperature for 48 hours. Alloys of nichrome containing additions of titanium or aluminium were heated to 900°C, held there for 5 hours, and cooled in air. The modulus of shear and internal friction of each of the investigated alloys were determined using two specimens, and the period of torsional oscillation of the system was measured five times in the temperature range under investigation. In Fig 2 the temperature dependence of the modulus of shear and internal friction of nickel-molybdenum alloys, is shown. In Fig 3 the temperature dependence of the modulus of slip, internal friction and Poisson coefficient of alloys of nichrome and aluminium or titanium is shown: 1 - nichrome + 2.2 at.% Al; 2 - nichrome + 2.5% at Ti; o - modulus of shear; — modulus of internal friction; ---- Poisson coefficient. As a result of the above experiments, the authors have arrived at the following conclusions:

1. For the investigated nickel alloys, a deviation of the temperature dependence of the modulus of shear from

Card 4/5 linearity, and a sharp increase in internal friction,

SOV/126-7-2-17/39

Temperature Dependence of the Modulus of Shear and Internal Friction
of a Few Nickel-Base Alloys

occur in the same temperature range, and are probably due to elastic imperfections and, more important, to plastic slip along the grain boundaries.

2. The Poisson coefficient for nichrome containing 2.5% Ti begins to increase noticeably at 400 to 500°C, which may be associated with a considerable increase in plasticity of this alloy.

There are 3 figures, 1 table and 12 references, 6 of which are Soviet, 6 English.

ASSOCIATION: Institut metallofiziki AN Ukr.SSR (Institute of Metal Physics, Ac. Sc., Ukr. SSR)

SUBMITTED: April 16, 1957

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25576

S/185/60/005/002/011/022
D274/D304

18-8200

4016, 1045, 1416

AUTHORS:

Khodov, Z.L. and Il'chenko, V.I.

TITLE:

Temperature dependence of Young's modulus and of the damping decrement of Nichrome alloys with tungsten and molybdenum admixtures

PERIODICAL:

Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 2, 1960, 235-239

TEXT: The influence of tungsten and molybdenum admixtures on Young's modulus and the internal friction of Nichrome alloys is studied, as well as their temperature dependence. For determining Young's modulus and the damping decrement, a device was used (designed at the Institute of Metalphysics) which permits determining very accurately the frequency of the natural oscillations of the specimen and the number of oscillations for which the amplitude is reduced by half; the elasticity modulus and the damping decrement were calculated on this basis. Graphs are given where the obtained time-dependences are plotted. For Ni-Cr-W alloys, an increase in

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tungsten content from 0.6 to 2.86 at .% leads to an increase of the elasticity modulus over a temperature range of 20 to 800°C. The damping decrements for these alloys vary little from room temperature to 500-550°C, but a further increase in temperature leads to a sharp rise in the damping decrement. For Ni-Cr-Mo alloys, containing 0.97 and 3.25 at .% Mo, the elasticity modulus has nearly the same value; the alloy with 6.44 at .% Mo has the smallest modulus. The relationships for the damping decrement of these alloys are similar to those for Ni-Cr-W. The observed sharp rise in the damping decrement is apparently due to viscous slip along the grain boundaries. From the obtained temperature dependences of the elasticity modulus, the temperature coefficients were computed graphically; the temperature coefficients differ very little from each other for all the investigated alloys at the same temperature. It is noted that the alloy containing 15.94 at .% Cr and 3.25 at .% Mo has an elasticity modulus nearly equal (for the entire interval) to the modulus of the alloy containing 16.48 at .% tungsten; this value of the elasticity modulus is the largest of all the investigated values. The relationships obtained between the modulus and the

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S/185/60/005/002/011/022
D274/D304

Temperature dependence...

molybdenum and (respectively), tungsten content lead to the conclusion that these admixtures have a similar effect on Ni-Cr alloys, (at any rate for small admixtures of the third element, up to 3 at .%). There are 5 figures, 2 tables and 4 Soviet-bloc references.

ASSOCIATION: Instytut metalofizyky AN USSR (Institute of Metal-physics AS UkrSSR)

SUBMITTED: July 8, 1959

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18-8200

1.555

27957

S/185/60/005/004/019/021
D274/D306

AUTHOR: Khodov, Z.L.

TITLE: Ultrasound velocity in binary metal-alloy systems
of eutectic type and their elastic properties

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 4, 1960,
574-576

TEXT: The results are given of an experimental study of the dependence of ultrasound velocity on concentration in binary, liquid, metal-systems of eutectic type. The following alloy systems were measured: bismuth-lead, bismuth-tin, bismuth-cadmium, lead-tin, lead-cadmium and tin-cadmium. The velocity of ultrasound was measured by a special pulse-apparatus. From the velocity and from density data (taken from literature), the factor of adiabatic compressibility and the reciprocal magnitudes - the bulk moduli, were determined. It was established that for the systems bismuth-tin and bismuth-lead,

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D274/D306

Ultrasound velocity...

the bulk modulus is a linear function of the concentration. For the system bismuth-cadmium, the factor of adiabatic compressibility is a linear function of the concentration. The isotherms of the bulk modulus, as well as those of the factor of adiabatic compressibility are nearly linear for the system lead-tin and cadmium-lead. In the ideal case, the velocity of ultrasound in an alloy is expressed by

$$a^2 = c_1 \frac{M_1}{M} a_1^2 + c_2 \frac{M_2}{M} a_2^2 \quad (2)$$

where a_1 and a_2 are the velocities of ultrasound in the components; M_1 and M_2 are the atomic weights; c_1 and c_2 are the concentrations. For the velocity of ultrasound in an emulsion one obtains:

$$a^2 = \frac{1}{(\epsilon_1 \beta_1 + \epsilon_2 \beta_2) (\epsilon_1 \rho_1 + \epsilon_2 \rho_2)}, \quad (3)$$

where β_1 and β_2 are the factors of adiabatic compressibility of the components, ρ_1 and ρ_2 are the densities, and ϵ_1 and ϵ_2 are the bulk concentrations. The obtained experimental results were

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D274/D306

Ultrasound velocity...

compared with the theoretical curves obtained from formulas (2) and (3). For all the systems, with the exception of bismuth-cadmium, the experimental data agree with the values obtained from formula (2). For the system bismuth-cadmium, the experimental values agree with those obtained from formula (3). If small volume changes accompany the formation of the alloys, it follows from Eq. (3) that the bulk modulus depends linearly on the bulk concentration, whereas formula (3) was obtained on the assumption of linear dependence of factor of adiabatic compressibility on bulk concentration. It can be assumed that the presence of a high degree of short-range order affects the changes in elastic properties of liquid alloys, rendering them (in this respect) similar to emulsions. If this assumption is accepted, the obtained result can be explained by the fact that the system bismuth-cadmium should have, in the liquid state, a high degree of short-range order. Evidently, this high degree of short-range order is preserved over a wide temperature range. This was confirmed by A.R. Regel' and F. Gabdullayev (Ref. 11: ZhTF, 1957, 27, 9, 1956). Since the solubility of lead and of tin in bismuth is

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85970

S/126/60/010/005/022/030
E032/E414

24.1206

1144, 1182, 1147

AUTHOR: Khodov, Z.L.

TITLE: Velocity of Ultrasonic Waves in Melts of Binary
Metallic Systems of the Eutectic Type and Their Elastic
Properties

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5,
pp.772-779

TEXT: The aim of the present work was to investigate the concentration dependence of the velocity of ultrasonic waves in binary liquid metal systems of the eutectic type. For some of the systems the concentration dependence of the coefficient of adiabatic compressibility was also determined. Measurements were carried out on the following binary alloys: tin-lead, tin-bismuth, tin-cadmium, lead-bismuth, lead-cadmium and bismuth-cadmium. The present work is a development of previous investigations reported by the present author in Ref.5 and 6. The velocity of the ultrasonic waves was measured with the pulse apparatus described in Ref.11 and built at the Institute of Physics of Metals, AS UkrSSR. The velocity of ultrasonic waves in the four basic metals used in this investigation is given in the following table:

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Velocity of Ultrasonic Waves in Melts of Binary Metallic Systems
of the Eutectic Type and Their Elastic Properties

| Metal | Temperature, °C | Velocity of the ultrasonic waves, m/sec |
|-------|-----------------|---|
| Sn | 243 | 2466 |
| Pb | 344 | 1826 |
| Cd | 331 | 2223 |
| Bi | 289 | 1666 |

The values obtained are in good agreement with measurements carried out by other authors. The variation of the velocity of ultrasonic waves with temperature was found to be 0.2 m/sec deg for tin and 0.3 m/sec deg for lead. No noticeable change in the velocity of ultrasonic waves in bismuth with temperature was found in the region 289 to 356°C. The velocity of ultrasonic waves in alloys was measured at temperatures close to the liquidus temperature and also at higher temperatures. Fig.1 to 6 show the Card 2/5

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isotherms of the velocity of ultrasonic waves in the above systems. These curves were then used to calculate the coefficient of adiabatic compressibility using the well known formula

$$\beta_{ad} = \frac{1}{a^2 \rho} \quad (1)$$

where a is the velocity of ultrasonic waves and ρ is the density of the alloy. Fig.7 to 10 show the isotherms of the adiabatic compressibility (β) and the bulk modulus (K). It was found that the velocity of ultrasonic waves in the majority of these alloys can be represented by the following formula:

$$a^2 = c_1 \frac{M_1}{M} a_1^2 + c_2 \frac{M_2}{M} a_2^2 \quad (3)$$

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where a_1 and a_2 are the velocities of ultrasonic waves in the two components respectively, M_1 and M_2 are the atomic weights of the components and c_1 and c_2 are the atomic concentrations. \bar{M} is given by $\bar{M} = c_1 M_1 + c_2 M_2$. The bulk modulus on the other hand depends linearly on the concentration. In the case of a high degree of short-range order (the Bi-Cd system), the velocity of ultrasonic waves is given by

$$a^2 = \frac{1}{(\epsilon_1 \rho_1 + \epsilon_2 \rho_2)(\epsilon_1 \beta_1 + \epsilon_2 \beta_2)} \quad (4)$$

where ρ_1 and ρ_2 are the densities of the components, β_1 and β_2 are their adiabatic compressibilities and ϵ_1 and ϵ_2 their volume concentrations. In such cases the adiabatic compressibility is a linear function of the volume concentration.

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Velocity of Ultrasonic Waves in Melts of Binary Metallic Systems of the Eutectic Type and Their Elastic Properties

If the elastic properties of the two components are not very different, then the velocity of ultrasonic waves can be calculated from either of the above two formulae. There are 10 figures, 1 table and 27 references: 18 Soviet and 9 Non-Soviet (one of which is translated into Russian).

ASSOCIATION: Institut metallofiziki AN USSR
(Institute of Physics of Metals AS UkrSSR)

SUBMITTED: March 8, 1960

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20268

18.8100

1413, 1418, 1138

S/180/61/000/002/008/012
E071/E435

AUTHORS: Polotskiy, I.G., Beniyeva, T.Ya., Khodov, Z.L. and
Il'chenko, V.I. (Kiyev)

TITLE: The Influence of Alloying on Some Physical
Characteristics of Chromium and Nickel-Chromium Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Metallurgiya i toplivo, 1961, No.2, pp.108-114

TEXT: The relations governing changes in the elastic properties of alloys were studied in order to investigate the influence of some factors on the strength of interatomic bonds. The influence of the composition, temperature and plastic deformation on the elastic properties of solid solutions of transition elements was investigated. In addition, non-elastic properties for nickel-based alloys were also studied. The influence of tungsten and iron on the elastic properties of chromium, as well as of tungsten and molybdenum on the elastic and non-elastic properties of nichrome, and the influence of plastic deformation on the elastic properties of nichrome were investigated. Determination of the elastic
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properties of chromium and its alloys was carried out on ultrasonic impulse apparatus described by I.G.Polotskiy and T.Ye.Stefanovich (Ref.1) and the Young modulus and the damping decrement at elevated temperatures on an apparatus described by I.G.Polotskiy and V.F.Taborov (Ref.2). Chromium-based alloys, containing up to 13.05% of tungsten and up to 3.11% of iron, were used for the investigations. Chromium and its alloys were prepared from electrolytic chromium by smelting and casting in a high vacuo. The cast chromium was about 99.9% purity. Experimental chromium-tungsten alloys were smelted in a high-frequency furnace in an argon atmosphere. Nickel-based alloys Ni-Al, Ni-Cr-Mo, Ni-Cr-W were smelted in a high-frequency furnace in a vacuo. The purity of the starting materials was as follows: Cr - 99.9%, Ni - 99.99%, W - 99.95% and Mo - 99.9%. The chemical composition of the alloys investigated is given in wt.% in the table (OCT - rest). The Young modulus and the damping decrement were measured on polished specimens in the form of rods 7 mm in diameter and 200 mm long. During heat treatment the specimens were sealed in a quartz tube from which air had been evacuated (10^{-4} mm Hg). Chromium and Cr-Fe, Cr-W alloys were

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heated to 1100°C and retained at this temperature for 3 hours. Determination of the temperature dependence of the Young modulus was carried out in vacuo. In order to preserve approximately the same grain size of nickel alloys, the following heat treatment was used: nichrome alloys with various additions of tungsten in the form of 12 mm semis were heated to 900°C for 4 hours and, after producing the specimen, at 900°C for 1 hour; nichrome alloys with molybdenum additions in the form of 12 mm semis were annealed at 900°C for 2 hours and the specimens made from these were annealed at 900°C for 1 hour. After polishing, the specimens were annealed at 800°C in vacuo for 30 minutes. Cooling after annealing was done with the furnace. Determination of the velocity of propagation of longitudinal and transverse sonic waves in chromium (99.9%) enabled calculating the Young modulus, the shear modulus, Poisson's coefficient and the modulus compression from all sides for specimens of electrolytic chromium ($E = 27540 \text{ kg/mm}^2$, $G = 11150 \text{ kg/mm}^2$, $\mu = 0.24$ and $K = 17100 \text{ kg/mm}^2$). The experimental results are given in graphs as follows: concentration and temperature dependence of the elastic modulus for chromium

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alloys (Fig.1); temperature dependence of the Young modulus for Ni-Al alloys (Fig.2); temperature dependence of the Young modulus (continuous lines) and the damping decrement (broken lines) for nichrome with various additions of tungsten (a) and molybdenum (b) (Fig.3). Since changes in the elastic properties of metals and alloys after cold plastic deformation have been little studied, the authors investigated this influence on Ni-Cr alloys (Ni + 10.48 at.% Cr, Ni + 23.46 at.% Cr and Ni + 28.13 at.% Cr). In order to establish general relationships, copper of 99.9% purity was studied first. Determination of the elastic characteristic was done on the basis of changes in the velocity of propagation of longitudinal and transverse sound waves in the initial and deformed states in the direction of deforming stresses and perpendicular to this direction. The accuracy of the measurements was about 0.1%. All specimens were investigated in the annealed state. Ni-Cr alloys were deformed in a 60 ton press by uniaxial compression. The degree of deformation varied from 0 to 60%. The experimental results for copper are shown in Fig.4. The magnitude of the elasticity modulus of copper changes depending on the direction and

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degree of plastic deformation. In the direction of applied stresses for up to 9% of plastic deformation the Young modulus decreases, then remains constant to up to about 12% and with further increase of plastic deformation it decreases linearly. The elasticity modulus in the direction perpendicular to the direction of applied stresses decreases more sharply up to about 9% of the plastic deformation, then remains practically unchanged up to 20% of deformation and reaches a constant value on increasing the degree of deformation to 57%. At a deformation above 10% the difference in the value of the elasticity modulus in two perpendicular directions is probably related to a steady formation of the texture which is characteristic for this form of deformation. The influence of a low temperature annealing (100, 200, 300, 400 and 500°C) on the elastic properties of copper submitted to plastic deformation of 25 to 57% was also studied. The results (Fig.5) indicate that the temperature of the beginning of recrystallization is lower at higher degrees of deformation, e.g. for a 57% deformed copper specimen an increase in the elasticity modulus was observed already at 200°C while for less deformed specimens no change in the Young modulus was observed at Card 5/4

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this temperature. The value of the Young modulus of nickel alloys (Fig.6) also changes depending on the direction of applied stresses and the degree of deformation, whereupon a larger decrease of elastic properties was observed for alloys than for copper. It is pointed out that in nickel alloys, the influence of plastic deformation on the decrease of the modulus of elasticity increases with increasing concentration of chromium. The latter is possibly caused by the fact that in Ni-Cr alloys in addition to the formation of texture a decrease of elasticity takes place due to the destruction of the K-state, formed during the thermal treatment of alloys. The following conclusions are arrived at. 1) An increase in the elasticity moduli on additions of tungsten to chromium and a decrease in the Young modulus for Cr-Fe alloys within a wide range of temperatures indicates that tungsten in binary Cr-W alloys slightly strengthens interatomic bonds, while an addition of iron to chromium leads to weakening of the latter. 2) The temperature dependence of the Young modulus for nickel alloys containing 1.1 to 5.0 at.% of aluminium in the ferromagnetic temperature range is of the same character as for pure nickel but with increasing concentration of

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aluminium the curves of the temperature dependence begin to flatten out. Additions of aluminium have a slowing effect on the decrease in the Young modulus at elevated temperatures (500 to 800°C) and thus aluminium counteracts the weakening of Ni-Al alloys.

3) With increasing concentration of tungsten in nichrome (from 0.60 to 2.86 at.% W) the absolute value of the Young modulus for Ni-Cr-W alloys increases and its higher value is retained for alloys with a higher concentration of tungsten in the whole temperature range investigated (20 to 700°C). With increasing concentration of molybdenum from 0.97 to 6.44 at.%, the elasticity modulus for Ni-Cr-Mo alloys changes little. Therefore, the above alloys can be classified into a single group, as their Young moduli are basically determined by the elasticity moduli of nichrome.

4) The curves of the temperature dependence of the damping decrement for nichrome with various concentrations of tungsten and molybdenum have the same character but for alloys with a lower concentration of the above elements a sharp increase in the damping decrement was observed at lower temperatures. The latter is apparently caused by elastic imperfections and in the first instance by viscous slipping along the grain boundaries. There
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are 6 figures, 1 table and 16 references: 12 Soviet and
4 non-Soviet.

SUBMITTED: June 1, 1960

| Химический состав, вес. % | | | | | | | | |
|---------------------------|------|-------|------|------|-------|------|-------|-------|
| O | N | H | Fe | Al | W | Mo | Cr | Ni |
| 0.04 | 0.04 | 0.003 | — | — | — | — | ост.* | — |
| 0.04 | 0.04 | 0.003 | 1.02 | — | — | — | ост. | — |
| 0.04 | 0.04 | 0.003 | 3.11 | — | — | — | ост. | — |
| — | — | — | — | — | 2.08 | — | ост. | — |
| — | — | — | — | — | 13.05 | — | ост. | — |
| — | — | — | — | — | — | — | ост. | 90.99 |
| — | — | — | — | 0.50 | — | — | — | ост. |
| — | — | — | — | 2.37 | — | — | — | ост. |
| — | — | — | — | — | 0.10 | 1.6 | 14.46 | ост. |
| — | — | — | — | — | 0.50 | 5.3 | 14.10 | ост. |
| — | — | — | — | — | 0.15 | 10.3 | 14.03 | ост. |
| — | — | — | — | — | 1.90 | — | 12.59 | ост. |
| — | — | — | — | — | 5.00 | — | 14.00 | ост. |
| — | — | — | — | — | 8.60 | — | 14.01 | ост. |

Table

* Остальное.

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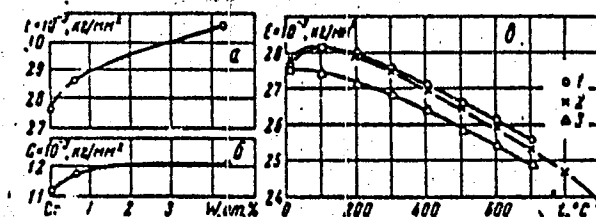
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Fig.1. Concentration (a,б) and temperature (B) dependences of elasticity moduli of chromium alloys.

Fig.1a - Young modulus of Cr-W alloys, $E \times 10^{-3} \text{ kg/mm}^2$ vs W, at.%;

Fig.1б - shear modulus of Cr-W alloys, $G \times 10^{-3} \text{ kg/mm}^2$ vs W, at.%;

Fig.1B - the influence of the temperature on the Young modulus of the alloys, $E \times 10^{-3} \text{ kg/mm}^2$ vs $t, ^\circ\text{C}$. 1 - Cr + 0.13 at.% O; 2 - Cr + 1.0 at.% Fe; 3 - Cr + 2.9 at.% Fe.



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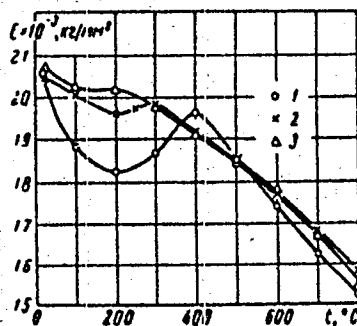
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E071/E435

Fig.2. Temperature dependence of the Young modulus for Ni-Al alloys. $E \times 10^{-3} \text{ kg/mm}^2$ vs $t, ^\circ\text{C}$

1 - Ni; 2 - Ni + 1.1 at.% Al; 3 - Ni + 5 at.% Al.



Фиг. 2.

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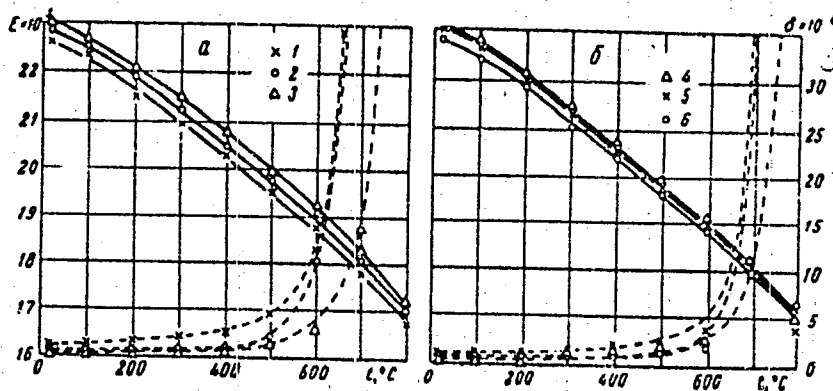
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Fig.3. Temperature dependence of the Young modulus (continuous lines) and damping decrement (broken lines) for nichrome with various additions of tungsten (Fig.3a) and molybdenum (Fig.3b)

1 - 0.6 at.% W; 2 - 1.62 at.% W; 3 - 2.86 at.% W;
4 - 0.97 at.% Mo; 5 - 3.25 at.% Mo; 6 - 6.44 at.% Mo.



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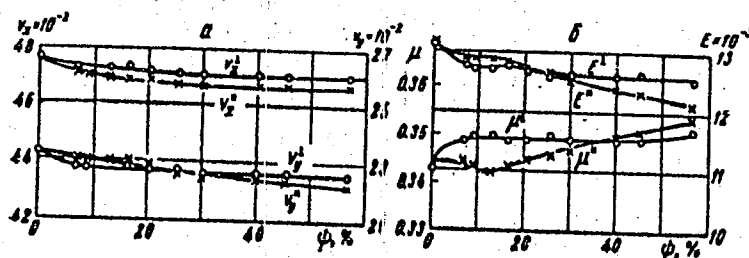
Фиг. 3.

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Fig. 4. Influence of the degree of plastic deformation $\psi\%$ of copper on the velocity of propagation of ultrasonic vibrations (a), on the change of the Young modulus and Poisson coefficient (δ) in the direction of the application of stress (v_x'', v_y'', E'', μ'') and in the perpendicular direction (v_x^I, v_y^I, E^I, μ^I)



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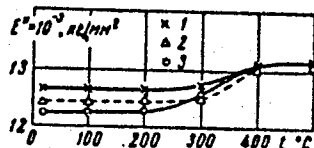
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Fig.5. Influence of the annealing temperature on changes in the Young modulus of copper subjected to deformation

1 - 25.6%; 2 - 40.3%; 3 - 57.0%



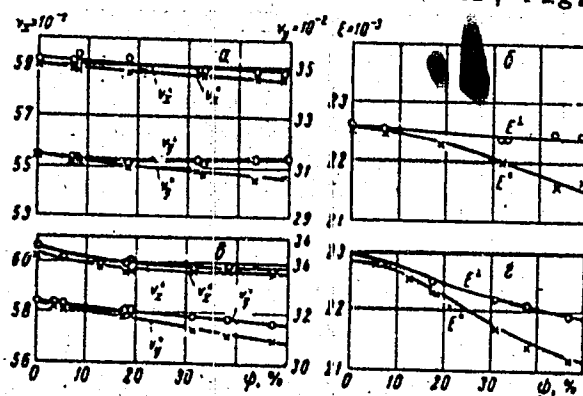
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Fig.6. The influence of the degree of plastic deformation, ψ %, of Ni-Cr alloys on the velocity of propagation of supersonic vibrations (Fig.6a and B) and changes of the Young modulus (Fig.6b, 2) in the direction of stress (v_x'' , v_y'' , E'') and in the direct perpendicular to the direction of application of stress (v_x^1 , v_y^1 , E^1); Fig.6a, B - Ni + 10.48 at.% Cr; Fig.6b, 2 - Ni + 28.13 at.% Cr



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L 36111-66 EWT(1)/EWT(m)/EWP(k)/T/EWP(t)/ETI IJP(c) JD/JH

ACC NR: AP6017306

SOURCE CODE: UR/0126/66/021/005/0727/0731

AUTHORS: Polotskiy, I. G.; Ovsiyenko, D. Ye.; Khodov, Z. L.; Sosnina, Ye. I.;
Bazoliyuk, G. Ya.; Kushnir, V. K.

ORG: Institute of Metal Physics AN UkrSSR (Institut metallofiziki AN UkrSSR)

TITLE: Influence of ultrasound on the degree of perfection of single crystals of aluminum, grown from the melt 9m 14

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 5, 1966, 727-731

TOPIC TAGS: aluminum, metal crystal, metal crystallization, ultrasonic effect, ultrasonic irradiation, single crystal

ABSTRACT: The effect of an ultrasonic field on the degree of perfection of aluminum crystals grown from the melt was studied. The study supplements the results of B. Langenecker (Phys. Rev. Letters, 1965, 14, 221). The experimental procedure consisted of subjecting a crystallizing aluminum melt to the action of an ultrasonic field (see Fig. 1). The structure of single crystals of aluminum derived from the melt with and without the action of the ultrasonic field was studied by means of double x-ray reflection (Ye. I. Sosnina, L. I. Meloshko, and D. Ye. Ovsiyenko. Issledovaniye nesovershenstv kristallicheskego stroeniya, Kiyev, izd. Nauchnaya mysl', 1965, str. 122) and by sound absorption and etching techniques. The experimental results are presented graphically (see Fig. 2). The application of an ultrasonic

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UDC: 669.172:621.7892:546.621

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ACC NR: AP6017306

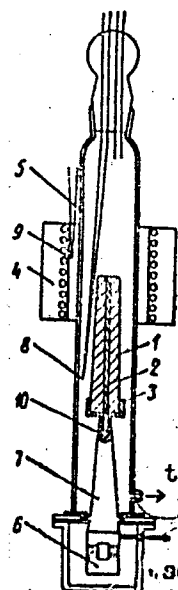


Fig. 1. Apparatus for growth of single crystals in an ultrasonic field. 1 - graphite crucible, 2 - metal stock, 3 - single crystalline seed, 4 - tube furnace, 5 - quartz tube, 6 - vibrator, 7 - concentrator, 8 - inner thermocouple, 9 - outer thermocouple, 10 - molten eutectic Bi -- Cd.

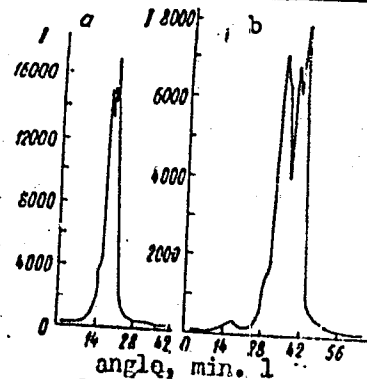


Fig. 2. Curves for double reflection from a single crystal of aluminum. a - before ultrasonic treatment; b - after ultrasonic treatment in the solid phase.

field to a growing aluminum crystal causes a considerable disorientation of the subgrains in the latter. It is suggested that the disorientation effect is caused by the tensions created by the ultrasonic field in the growing crystals. Orig. art. has: 2 tables and 4 figures.

SUB CODE: 20,115

SUBM DATE: 19Jul65/

ORIG REF: 004/

OTH REF: 002

PANKOVA, R.A.; KHODOVA, D.N.; GORYUSHKINA, I.A.

Study on the survival of dysentery microbes in dried feces in transportation under the conditions of Northern Caucasus. Zhur. mikrobiol.; epid. i immun. 41 no.6:133-134 Je '64.

(MIRA 18:1)

1. Dorozhnaya sanitarno-epidemiologicheskaya stantsiya Severo-Kavkazskoy zheleznoy dorogi.

GORYUSHKINA, I.A.; KHODOVA, D.N.

Some simplification of the methodology for determining the sensitivity of microbes to sulfanilamides. Lab. delo no.3: 178-179 '65. (MIRA 18:3)

1. Laboratoriya dorozhnoy sanitarno-epidemiologicheskoy stantsii Severo-Kavkazskoy zheleznoy dorogi (nachal'nik V.S. Krivtsov).

KHODOVA, M., преподаvatel'

Under the motto "Love the beautiful." Obshchestv. pit. no.3:38
Mr '63. (MIRA 16:6)

1. Ivanovskiy tekhnika obshchestvennogo pitaniya.
(Restaurants, lunchrooms, etc.—Vocational
guidance)

KHODOVA O. YA.

USSR/ Medicine - Mosquitoes Bird Nests

May/Jun 49

"Bird Nests-as Breeding Grounds for Mosquitoes (Phlebotomus)," P. A. Petrichcheva, V. V. Gubar', A. T. Voylochnikov, I. M. Grokhovskaya, K. M. Sokolova, O. Ya Khodova, A. B. Gasparova, Div of Parasitol and Med Zool, Inst of Epidemiol and Microbiol, Acad Med Sci USSR, 2 1/2 pp

"Zool Zhur" No 3

Investigated 113 nests of nine species of birds and found only eight contained evidence of mosquitoes. In these eight nests found eight larva, 23 pupa, and 136 cases, indicating that nests are not one of more frequently used breeding places.

Dir, Div of Parasitol and Med Zool: Acad Ye. N. Pavlovskiy; Dir, Inst of Epidemiol and Microbiol: Prof V. D. Tisakov.

PA 151T55

ANDROSOV, F.Z.; KARAVASHKOVA, A.I.; LAPIDUS, S.S.; KHODOVA, O.Ia.

Control of flies in stock pavilions at the All-Union Agricultural Exhibition. Veterinariia 32 no.5:72 My '55.
(FLIES)(DISINFECTION AND DISINFECTANTS) (MLWA 8:7)

KHODOVA, R.N.

Infinitesimal classification of second order curves in Lobachevskii's
plane. Uch. zap. Ivan. gos. ped. inst. 10:45-54 '56. (MLRA 10:4)
(Geometry, Non-Euclidean)

KOSHKIN, M.L., prof. IDLINA, A.G., kand.med.nauk, ROYTMAN, T.A., KHODOVA, R.Z.
DUDCHENKO, I.I.

Effect of BUV-15 lamps on children of kindergarten age [with
summary in English]. *Pediatrics* 36 no.6:67-73 Jo '58 (MIRA 11:6)

1. Iz kafedry obshchey gigiyeny Khar'kovskogo meditsinskogo
instituta i Khar'kovskogo oblastnogo doma rebenka No.1.

(ULTRAVIOLET RAYS, eff.

indirect, on child develop. (Rus))

(ANTISEPTIC AND ASEPTIC,

ultraviolet irradiation in prev. of aerogenic infect.
in schools (Rus))

(AIR, microbiology,

ultraviolet prev. of aerogenic infect. in schools (Rus))

YAMPOL'SKIY, S.M. [Ampol's'kyi, S.M.], prof.; VENGEROVSKIY, Ye.O. [Venherova'kyi, IE.O.], vrach; ABER, S.Ya., dotsent; SHELUD'KO, Ye.I. [Shelud'ko, IE.I.], vrach; KHODOVA, R.Z., vrach

In memory of O.M.Fedotova. Ped., akush. i gin. 23 no.6:34 '61.
(MIRA 15'4)

(FEDOTOVA, OLENA MYKHAILIVNA, 1884-1960)

ALIMOV, Stanislav Petrovich; LEYBSON, Mark Genrikhovich; KHODOVETS,
Pavel Iosifovich; SAVINA, Z.A., vedushchiy red.; POLOSINA,
A.S., tekhn.red.

[Increasing oil recovery; Sakhalin oil workers' practice]
Intensifikatsiia dobychi nefi; opyt sakhalinskikh nefianikov.
Moskva, Gos.nauchno-tekhn.izd-vo nefi. i gorno-toplivnoi lit-ry,
1961. 71 p. (MIRA 14:6)
(Sakhalin—Oil fields—Production methods)

43409

S/051/62/013/005/015/017
E039/E420

11.3900
AUTHORS:

Aleksandrov, Ye.B., Khodovoy, V.A.

TITLE:

The detection of the K^{40} isotope by means of the optical orientation of atoms

PERIODICAL: Optika i spektroskopiya, v.13, no.5, 1962, 751-752

TEXT: In this method the paramagnetic resonance is detected by a change in optical absorption in the medium. It has been used previously in the case of alkali metals at vapour pressures of $\sim 10^{-6}$ mm Hg and less. The detection of K^{40} in the natural isotopic mixture of potassium by means of paramagnetic resonance between Zeeman components of the hyperfine structure of the basic state in the Earth's field was shown to be impossible. This was because of the signal to noise ratio and the fact that the K^{40} is orientated only by collision with atoms of K^{41} and K^{39} . An increase in the K^{40} content by raising the temperature of the resonance vessel is precluded as the vapour then becomes opaque to resonance radiation. This difficulty is overcome by allowing the K^{40} atoms to make collisions with optically orientated atoms of sodium vapour. In this case the resonance

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The detection of the K^{40} isotope ...

S/051/62/013/005/015/017
E039/E420

vessel contains potassium with a Na admixture and argon as a buffer gas. In order to increase the relaxation time the walls of the resonance vessel are coated with eicosane. At 180°C the optimum pressure of Na vapour is attained ($\sim 10^{-5}$ mm Hg). The potassium vapour pressure is then $\sim 10^{-2}$ mm Hg and hence the K^{40} vapour pressure is $\sim 10^{-6}$ mm Hg. As a result of collisions with the Na atoms the K atoms acquire some orientation and as the number of Na atoms transmitting their orientation to K atoms increases the transmission of the vapour with respect to sodium light decreases. The arrangement of the apparatus is similar to that of H. G. Dehmelt (J. Phys. rad., 19, 1958, 866). In a magnetic field of 0.34 gauss, three resonance signals were observed: the first at 238 Kc/s corresponds to the resonance for Na, K^{41} , K^{39} and probably Rb^{87} with a signal to noise ratio $S = 4 \times 10^3$; the second at 158 Kc/s corresponds to Rb^{85} present as an impurity and the third at 107 Kc/s is the K^{40} resonance with $S \sim 5$. The possibilities of this method for the detection and determination of small concentrations of one alkali metal or an isotope in another are not exhausted.

SUBMITTED: May 14, 1962
Card 2/2

[Abstractor's note:
Abridged translation.]

L 11171-63 EWT(1)/BDS--AFPTC/ASD
ACCESSION NR: AP3002794

S/0051/63/014/006/0823/0823

AUTHOR: Aleksandrov, Ye. B.; Khodovoy, V. A.

TITLE: Regarding the Dehmelt experiment 21

SOURCE: Optika i spektroskopiya, v. 14, no. 6, 1963, 823

TOPIC TAGS: paramagnetic resonance, optical orientation, spin relaxation, optical pumping

ABSTRACT: H. G. Dehmelt (Phys. Rev., 105, 1487, 1957) carried out an experiment on determining the relaxation time of sodium atoms in the process of optical orientation. The present authors question Dehmelt's interpretation and analysis of his experimental results. Dehmelt attributed the appearance of the absorption signal to inversion of the magnetic field; the authors assert that the absorption is determined by the probabilities for optical transitions that do not depend on the energy of the atom in a weak magnetic field. Accordingly, the absorption should not change with field inversion. The authors repeated the Dehmelt experiment with particular attention to the relation between the residual field and the rate of reversal of the main field. Stray fields were thoroughly compensated. The orientation was realized in rubidium vapor. No change in transparency of the

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L 11171-63

ACCESSION NR: AP3002794

cell was observed with a pulse rise time of about 10 μ sec -6 sec which confirms the authors' views and disproves Dehmelt's. "We take this opportunity to express our gratitude to A. M. Bonch-Bruyevich for discussion of the results and interest in the work."

ASSOCIATION: none

SUBMITTED: 07Jan63

DATE ACQD: 15Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV 000

OTHER: 003

Card

1b/wm
2/2

ALEKSANDROV, Ye.B.; BONCH-BRUYEVICH, A.M.; KHODOVOY, V.A.

Spin exchange. Izv. AN SSSR. Ser. fiz. 27 no.8:1070-1077 Ag
'63. (MIRA 16:10)

L 17797-63

EWI(1)/BDS

AFTC/ASD/LJP(C)/SSD GO

ACCESSION NR: AP3007069

S/0056/63/045/003/0503/0510 58
57

AUTHOR: Aleksandrov, Ye. B.; Konstantinov, O. V.; Perel', V. I.;
Khodovoy, V. A.

TITLE: Modulation of scattered light with the aid of parametric resonance

SOURCE: Zh. eksper. i teoret. fiziki, v. 45, no. 3, 1963, 503-510

TOPIC TAGS: parametric resonance, scattered light modulation, cadmium vapor, cadmium excited state, scattered light intensity modulation, rf cadmium lamp, cadmium luminescence, interference between excited states

ABSTRACT: A theoretical and experimental study of the resonance scattering of light by cadmium vapor in a weak magnetic field has been carried out. The effect examined is caused by the interference of two excited states, occurring during modulation of the energy interval between them. Linearly polarized light from an rf cadmium lamp excited the resonance luminescence of Cd vapor at 2000 in a Wood-type horn-shaped vessel. Luminescence with a wavelength of
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L 17797-63

ACCESSION NR: AP3007069

3261Å was detected by a photomultiplier. The rf magnetic field (1030 kc) was established by a solenoid surrounding the vessel, with additional modulation produced by a 30-cps high-voltage signal which was used as the base voltage for the synchronous detector. The constant magnetic field was imposed by a system of Helmholtz rings. This field was slowly varied to obtain the resonance curve. The excited state of the Cd vapor was split into a Zeeman triplet, and the intensity of scattered light was modulated by the frequency of the rf field and integral multiples of that frequency. The extent of modulation and the mean intensity of luminescence showed resonant maxima when the difference of the frequencies of σ -components was an integral multiple of the rf modulation frequency. A possible combination of the effects of resonance scattering of modulated light and parametric resonance was indicated. When the modulation frequencies of the field and the light do not coincide, the intensity of scattered light will contain combination harmonics. Orig. art. has: 5 figures and 22 formulas.

ASSOCIATION: Opticheskiy Institut Im. S. I. Vavilova (Institute of Optics)

SUBMITTED: 09Apr63

SUB CODE: PH

Card 2/2

DATE ACQ: 08Oct63

NO REF SOV: 003

ENCL: 00

OTHER: 005

ACCESSION NR: AP4012561

S/0056/64/046/001/0331/0338

AUTHOR: Khodovoy, V. A.

TITLE: "Parametric resonance" in luminescence as a many-photon process

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 331-338

TOPIC TAGS: luminescence, parametric resonance, many photon processes, modulation of atom luminescence, optical photon, radio frequency photon, atomic level spacing

ABSTRACT: It is shown that the process defined as parametric resonance in luminescence and described by Ye. B. Aleksandrov et al. (ZhETF, v. 45, 503, 1963) can be regarded as a process in which one optical and several radio-frequency photons participate simultaneously. A qualitative analysis shows that the many-photon transitions can lead to a constant phase difference between excited states, and that the various processes occurring in parametric resonance can

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ACCESSION NR: AP4012561

be described in terms of the absorption and emission of fixed numbers of photons. An approximate theoretical analysis of the phenomenon is also presented. The similarity between many-photon processes in radiation and frequency modulation of the radiation of an atom with the aid of the Stark and Zeeman effects is also pointed out. "I am grateful for the opportunity to thank Ye. B. Aleksandrov for continuous aid, and also O. V. Konstantinov and V. I. Perel' for useful discussions." Orig. art. has: 3 figures and 15 formulas.

ASSOCIATION: None

SUBMITTED: 24Jun63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 003

OTHER: 008

Cord 2/2

ALEKSANDROV, Ye.B.; KHODKOVY, V.A.

Letters to the editors. Opt. i spektr. 18 no.6:1090 Je '65.
(MIRA 18:12)

L 10789-66 FBD/ENT(1)/EMP(1)/ENT(m)/SEC(k)-2/EPF(h)-2/T/EMP(k)/EWA(m)-2/EWA(h)/

ACC NR: AP6001660 ETC(m) SC/E /LJP(c) SOURCE CODE: UR/0051/65/019/006/0982/0984

AUTHOR: Aleksandrov, Ye. B.; Monch-Bruyevich, A. M.; Kostin, N. N.; Khodovoy, V. A.

ORG: none

TITLE: Stimulated Raman scattering in a selective resonator

SOURCE: Optika i spektroskopiya, v. 19, no. 6, 1965, 982-984

TOPIC TAGS: laser, Raman scattering, stimulated emission, laser cavity, Raman laser

ABSTRACT: The stimulated Raman scattering was investigated at an excitation power just above the threshold using the following three different setups: 1) a Raman cell in the resonator of a laser; 2) a longitudinal selective resonator (the term used by the authors for the case when the Raman laser resonator is in the direction of the ruby laser resonator); and 3) a transverse selective resonator (the term used for the case when the Raman laser resonator is rotated 90° from the direction of the axis of the ruby laser, i.e., a 90° off-axis Raman laser resonator). In the first setup the giant pulses were produced by a ruby crystal. Using two variable-transmission-coefficient filters (transmission coefficient 30-50% at $\lambda = 694 \text{ m}\mu$) the effective intensity of the 30-100 nsec-duration pulses in the resonator reached 100 Mwt/cm². The maximum energy per pulse was 3-4 j. Two dielectric mirrors with a transmission coefficient of 0.4% at $\lambda = 694 \text{ m}\mu$, 0.8% at $\lambda = 745 \text{ m}\mu$ (the fundamental

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UDC: 535.375+621.375.9:535

L 10789-66

ACC NR: AP6001660

SRS line in benzene), 40% at $\lambda = 805 \text{ m}\mu$ (first harmonic) and 70% at $\lambda = 875 \text{ m}$ (second harmonic) were used in the experiments. The SRS in benzene had thresholds for a specified length of the Raman cell (l) and the laser input power. No SRS was observed at $l < 2$; however, SRS was stable for $5 < l < 60 \text{ cm}$. The threshold power decreased almost linearly with increasing l. At $l = 60 \text{ cm}$ the efficiency of energy conversion reached 10% of the power in the cavity. It was observed that an increase in the energy of the pulses from the ruby 1.5—2 times above the threshold resulted in a three-order increase in SRS. In the longitudinal selective setup the additional reflector between the ruby rod and the Raman cell had a transmission coefficient of 90% at $\lambda = 694 \text{ m}\mu$, 10% at $\lambda = 745 \mu$, and 1% at $\lambda = 805$ and $875 \text{ m}\mu$. In this mode of operation the efficiency of energy conversion was at least as high as that in the previous case. Two higher harmonics at $\lambda = 745$ and $805 \text{ m}\mu$ which reached saturation at ~10% of the input power were observed. Results similar to those of the longitudinal setup were achieved with a transverse selective setup. However, SRS was achieved in a Raman cell the length of which along the laser beam was only 1 cm. Stimulated Brillouin scattering in benzene was also observed in this setup. Orig. art. has: 1 figure.

[CS]

SUB CODE: 20

SUBM DATE: 15Apr65/ OTH REF: 004/ ATD PRESS: 4/68

Card 2/2

I 10242-66 FED/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCIB/IIP(c)

ACC NR: AP6000197 WG/WH SOURCE CODE: UR/0056/65/049/005/1435/1444

AUTHOR: Aleksandrov, Ye. B.; Bonch-Bruyevich, A. M.; Kostin, N. N.; Khodovoy, V. A.

ORG: none

TITLE: Investigation of stimulated Raman and Brillouin scattering in selective resonators

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 5, 1965, 1435-1444

TOPIC TAGS: laser, second harmonic nonlinear optics, Raman scattering, Brillouin scattering, resonator

ABSTRACT: The stimulated Raman scattering was investigated at an excitation power just above the threshold using the following three different setups: 1) a Raman cell in the resonator of a laser; 2) a longitudinal selective resonator [the term used by the authors for the case when the Raman laser resonator is in the direction of the ruby laser resonator]; and 3) a transverse selective resonator [the term used for the case when the Raman laser resonator is rotated 90° from the direction of the axis of the ruby laser, i.e., a 90° off-axis Raman laser resonator] (see Fig. 1). In the first setup (Fig. 1a) the giant pulses were produced by a ruby crystal 10 to 12 cm long and 12-16 mm in diameter. With two variable-transmission-coefficient filters (transmission coefficient 10-80% at $\lambda = 6943 \text{ \AA}$) the effective intensity of

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L 10242-66

ACC NR: AP6000197

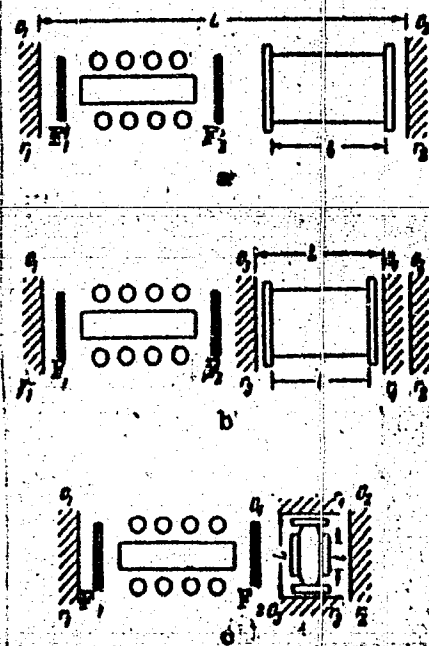


Fig. 1. The experimental setup

a - SRS in the ruby laser resonator;
b - SRS in the longitudinal selective resonator; c - SRS in the transverse selective resonator.

L - resonator length for scattered radiation; l - length of the "active" path for the scattered radiation in the resonator; 0 - mirrors; r - coefficient of reflection; F - variable coefficient of absorption filters.

Cord 2/4

L 10242-66

ACC NR: AP6000197

the 20—200 nsec-duration pulses in the resonator reached 100 Mw/cm^2 . The maximum energy per pulse was 5—6 J. Two dielectric mirrors O_1 and O_2 with a transmission coefficient of 0.4% at $\lambda = 694 \text{ m}\mu$, 0.8% at $\lambda = 745 \text{ m}\mu$ (the fundamental SRS line in benzene), and 40% at $\lambda = 805 \text{ m}\mu$ (the first harmonic) were used in the experiments. The sensitivity of the detectors was sufficient to register 10^{-4} of the energy of the laser pulse. The setup shown in Fig. 1a was used to investigate SRS in benzene. It was observed that an increase in the energy of the pulses from the ruby laser 1.5—2 times above the threshold resulted in a three-order increase in SRS at the fundamental frequency. Saturation was reached when the intensity of SRS was about 10% of the energy input, at which time the second harmonic whose energy output quickly reached the level of SRS at the fundamental frequency (at saturation), appeared. When the second harmonic reached saturation the duration and the intensity of the laser pulses decreased sharply due to the reverse effect of SRS on the ruby laser pulses. When the length of the Raman cell (1) was increased, the threshold power and the pulse energy required to achieve SRS decreased. Also, the larger the cell, the smaller the energy above the threshold at which second harmonics were generated. The SRS was stable when 1 was between 5 and 60 cm. In the longitudinal selective setup (Fig. 1b) reflector O_2 replaced O_1 and the transmission coefficient of O_3 was very high at $\lambda = 694 \text{ m}\mu$ and was at a minimum at $\lambda = 745 \text{ m}\mu$. The gain of SRS at $l = 5, 20$, and 60 cm was at least as high as in the previous case, although the pump power and the pulse energy required were considerably smaller. For example, when the output of a ruby laser pulse of 30 nsec duration was 40 Mw ($l = 20 \text{ cm}$) three 10 Mw SRS pulses of 20 nsec duration were observed in the Raman laser cell. Similar re-

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L 10242-66

ACC NR: AP6000197

sults were obtained using the selective transverse setup shown in Fig. 1c. The authors also observed stimulated Brillouin scattering in benzene, carbon disulfide, and nitrobenzene (the angle of the exciting beam was 90°). Use of the 90° off-axis Raman laser made it possible to obtain stimulated Brillouin scattering at lower pump power. Orig. art. has: 5 figures and 1 table. [CS]

SUB CODE: 20/ SUBM DATE: 15Jun65/ ORIG REF: 003/ OTH REF: 015/ ATD PRESS:

4161

Card

L 41369-65 EWT(1)

ACCESSION NR: AP5004258

S/0053/65/085/001/0003/0064

AUTHOR: Bonch-Bruyevich, A. M.; Khodovoy, V. A.

5
B

TITLE: Multiphoton processes

SOURCE: Uspekhi fizicheskikh nauk, v. 85, no. 1, 1965, 3-64

TOPIC TAGS: multiphoton process, nonlinear optics, quantum effect, laser effect, nonlinear process, frequency conversion, harmonic generation, Raman scattering, parametric resonance

ABSTRACT: The present review of multiphoton processes is based on 145 references published prior to July 1964. Only 21 of the references are Soviet. The review is divided into 3 sections. The first section is devoted to the basic theory of multiphoton processes and to a general review of experiments performed in this field. The second section deals with multiphoton processes not requiring consideration of the interference effect. An analysis is presented of multiphoton transitions between Zeeman sublevels of sodium doublet in a rotating field and in a field applied in any arbitrary direction. An analysis is made of two-photon absorption in CaF_2 doped with Er^{3+} .

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L 41369-65

ACCESSION NR: AP5004258

cesium vapor, liquids in which Raman scattering can be generated, and in KJ crystals. Two-photon excitation of fluorescence in anthracene is also discussed. The third section is a review of multiphoton processes requiring consideration of interference effects. This section is divided into two parts. Part one is an analysis of processes associated with interference effects in each atom of an ensemble (level crossing and parametric resonance). Part two deals with multiphoton processes associated with interference effects in an ensemble on noninteracting systems. This last subdivision deals with harmonic generation in the SHV frequency range, second harmonic generation in the optical range, and certain effects in Raman scattering of laser radiation. Orig. art. has: 71 formulas, 30 figures, and 4 tables. [CS]

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: NP, OP

NO REF SOV: 021

OTHER: 124

ATD PRESS: 3196

Card 2/2

1-27748-66 EWT(1) IIP(c) CO/LW
ACC NR AF6018698

SOURCE CODE: UR/0386/66/003/011/0425/0429

AUTHOR: Bonch-Bruyevich, A. M.; Kostin, M. N.; Khodovoy, V. A.

ORG: none

TITLE: Resonant birefringence in the electric field of a light wave

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 11, 1966, 425-429

TOPIC TAGS: potassium, double refraction, laser application, resonance absorption, light absorption

ABSTRACT: The authors observed the occurrence of birefringence in potassium vapor under the influence of the electric field of ruby laser emission by passing simultaneously light from a potassium lamp and from a ruby laser through a vessel containing saturated potassium vapor at 150C. At this temperature, the vapor absorbed approximately 50% of the resonant light from the lamp. When the laser pulse was applied (20 nsec duration), a clear-cut signal was observed, indicating an increase in the resonant radiation from the lamp passing through the vessel. At a laser emission power density of the order of 5 Mw/cm² the amplitude of the signal corresponded to transmission of several times ten per cent of the intensity of the light from the lamp. The greatest signal was observed when the lamp radiation and laser emission electric fields were at a 45° angle. There was no signal when this angle was 0 or 90°. There was likewise no signal when the potassium vapor in the vessel

Card 1/2

L 2774 46

ACC NR: AP6018698

4
was frozen out, when the potassium lamp was turned off, or when the filters used to polarize the light were removed. The latter, together with the dependence of the signal on the angle between the electric vectors, proves that the observed effect is due to birefringence induced by the laser pulse because the shift of the absorption line in the laser-emission electric field has different values when the electric vector of the light is parallel and perpendicular to the vector of the laser. The value of this line shift is calculated and the wavelength dependence of the laser emission intensity required to obtain a signal of prescribed magnitude is measured and found to be linear in the wavelength difference between the resonant transition and the laser emission. This agrees with the theoretical calculations. The authors thank V. M. Zakharova and N. A. Vorob'yeva of IGU for the opportunity to measure the line contour with their apparatus, and Ye. B. Aleksandrov for help and a discussion. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 28Mar66/ ORIG REF: 003/ OTH REF: 001

Card 2/2

L 29967-66 EWT(1) IJP(c)

ACC NR: AP6002883

SOURCE CODE: UR/0286/65/000/024/0041/0041

INVENTOR: Aleksandrov, Ye. B.; Bonch-Bruyevich, A. M.; Khodovoy, V.A.

ORG: none

TITLE: Method of measuring the modulus and direction of the vector of force of weak magnetic fields. Class 21, No. 176976

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 41

TOPIC TAGS: magnetic field measurement, vector, weak magnetic field, magnetic field intensity, paramagnetism, measurement

ABSTRACT: The method of measuring the modulus and direction of the vector of force of weak magnetic fields, based on the optic orientation of atoms, is characterized by the fact that the effect of the action of the measured magnetic field and of the known light intensity on the paramagnetic atoms is compared and the magnetic field strength is determined by the intensity of the orienting light. These characteristics are incorporated in order to widen the measurement range of weak magnetic fields.

SUB CODE: 20/ SUBM DATE: 13Apr64

Cord 1/1 cc

ACC NR: AP7007681

SOURCE CODE: UR/0386/66/003/002/0085/0088

AUTHOR: Aleksandrov, Ye. B.; Bonch-Bryevich, A. M.; Kostin, N. N.; Khodovoy, V. A.

ORG: State "Order of Lenin" Institute of Optics im. S. I. Vavilov (Gosudarstvennyy ordena Lenina Opticheskiy institut)

TITLE: Frequency shift of optical transition in the field of a light wave

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu, v. 3, no. 2, 1966, 85-88

TOPIC TAGS: optic transition, ruby laser, photomultiplier, optic filter, resonance line, laser pulsation, magnetic field intensity, light absorption/FS-7 filter, KS-19 bleaching filter

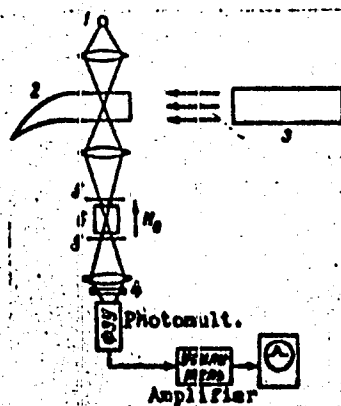
ABSTRACT: The authors experimentally investigated the frequency shift of the optical resonant transition $4S_{1/2} - 4P_{1/2,3/2}$ of potassium (principal doublet). It can be shown that the expected frequency shift of this transition is connected principally with virtual transition induced by the laser pulse from the ground level ($4S_{1/2} - 4P_{1/2,3/2}$) and the excited level ($4P_{3/2} - 6S_{1/2}$). The first pair of transitions is still sufficiently far from the resonances (the transition wavelengths are 7665 and 7699 Å, that of the laser is 6943 Å). The $4P_{3/2} - 6S_{1/2}$ transition is much closer to resonance ($\lambda = 6939$ Å). In spite of this, all these transitions make comparable contributions to the sought frequency shift of the investigated transition, owing to the difference in the oscillator strengths. It is important that the ground and

Card 1/4

UDC: none

ACC NR: AP7007681

excited levels are shifted here by the ruby-laser light in opposite directions. In the experiment light from potassium lamp 1 was passed through vessel 2 with potassium vapor saturated at 100°C (see the figure). At the selected temperature, the vapor absorbed about 80% of the lamp's resonant radiation. Transmission of light by vessel 2 was expected to increase during the action of the pulse from laser 3, provided the resultant transition frequency shift is commensurate with the line width of the lamp radiation (it was assumed that this line was broader than the absorption line of the vapor). The transmission of the resonant light was recorded with a photomultiplier whose output was fed to a pulsed oscilloscope (4 - glass filters).



Card 2/4

ACC. NR: AP7007681

The scattered laser light in the registration channel was reliably cut out with FS-7 filters. Preliminary experiments have shown, however, that the laser pulse is accompanied by scattered radiation with spectral components lying in the region of the registered potassium line. The authors used a special method of filtering the resonant line with the aid of the Faraday effect to combat the mechanism of radiation occurrence. After passing through vessel 2, the light beam of the potassium lamp was made to pass through an auxiliary cuvette 6 filled with potassium vapor and placed between crossed polaroids 5. A local magnetic field of approximately 2 kOe was applied to cuvette 6. The magnetic field produced, besides splitting of the absorption line, strong radiation of the plane of polarization of the light, but only in the nearest vicinity of optical resonance. By magnetic field intensity selection, the system was made to transmit almost all the resonant line, and to absorb the extraneous light. The entire apparatus behaves like a high-transmission optical filter with a bandwidth on the order of 0.1 cm^{-1} . Under the conditions described, a distinct signal was recorded, evidencing a decrease in the absorption of the resonant light by the potassium atoms in vessel 2 during the time of action of the laser pulse (20 nsec); the laser operated in the monopulse mode by using bleaching filters KS-19. To verify that the change in the light absorption was not connected with some experimental errors the authors checked: (1) that the signal vanished when the potassium light was turned off; (2) that the signal vanished when the potassium vapor was frozen out in vessel 2 (with the illumination on the photomultiplier maintained at the previous level); and (3) that the signal vanished when the operating mode of lamp 1 was forced so as to broaden the emission line (the broadening was confirmed by the observations). The minimum laser radiation power density at which

Cord 3/4

ACC NR: AP7007681

the bleaching signal was produced was $\sim 10 \text{ MW/cm}^2$, corresponding to an electric field intensity (in the light) of 10^5 V/cm . The half-width of the spectral emission line is estimated at $\sim 3 \times 10^9 \text{ cps}$, so that the observed shift was of the same order. The authors thank D. A. Godina for providing the high grade polaroids. Orig. art. has: 1 formula and 1 figure.

SUB CODE: 20 / SUBM DATE: 30Nov65 / ORIG REF: 001 /
OTH REF: 003

Card 4/4

KHODOYAROV, G.Kh., dotsent; VORONTSOVA, Z.I., nauchnyy sotrudnik

Observations on operations for transplanting Stensen's duct into the conjunctival cavity in xerophthalmia. Oft.zhur. 16 no.6:345-347 '61. (MIRA 14:10)

1. Iz Bashkirskogo nauchno-issledovatel'skogo trakhomatoznogo instituta (direktor - M.S. Tanatarova).
(CONJUNTIVA) (CONJUNTIVITIS) (PAROTID GLANDS)

BUREYKO, V.S., kand.tekhn.nauk; GRINSHTEYN, Kh.R., inzh.; KHODSKAYA, R.I.,
inzh.

Some problems of the technology of producing agloporite from
clay raw material. Sbor.trud.VNIINSM no.6:159-166 '62.
(MIRA 15:12)

1. Nauchno-issledovatel'skiy institut stroitel'nykh materialov
soveta narodnogo khozyaystva Belorusskoy SSR.
(Clay) (Aggregates (Building materials))

BEZBORODOV, M.A., [Bezbarodau, M.A.], akademik; KHODSKIY, L.G. [Khodski, L.H.],
inzh.

Properties of $K_2O-PbO-Al_2O_3$ glass. Vestsi AN BSSR. Ser. fiz-tekh.
nav. no. 3:42-49 '59. (MIRA 13:3)

I. AN BSSR.

(Glass)

S/081/61/000/012/019/028
B110/B216

AUTHORS: Bezborodov, M. A., Khodskiy, L. G.

TITLE: Lead phosphate enamels for aluminum

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1961, 396, abstract
12K374 (12K374) ("Sb. nauchn. rabot. In-t obshch. i
neorgan. khimii AN BSSR", 1960, no. I, 72-83)

TEXT: The authors studied the range of compositions of the system
 $K_2O + PbO + Al_2O_3 + B_2O_3 + P_2O_5$ characterized by low softening point
(414-425°C) high thermal expansion coefficient ($132-156.3 \cdot 10^{-7}$) and
resistance to boiling water with a view to preparing enamels suitable for
aluminum. The following property changes with composition were determined
for this system: Thermal expansion, density, and temperature at which
softening begins. A series of white enamels with properties rendering
them suitable for decorative coatings were prepared on the basis of a
glass of the composition (in mole%): $K_2O = 20$; $PbO = 30$; $Al_2O_3 = 15$;
 $B_2O_3 = 10$; $P_2O_5 = 25$. [Abstracter's note: Complete translation.]

Card 1/1

BEZBORODOV, M.A.; KHODSKIY, L.G.

Glasses of the system $K_2O - PbO - Al_2O_3 - B_2O_3 - P_2O_5$ as a base for
enamels on aluminum. Dokl.AN BSSR 4 no.3:116-119 Mr '60.

(Glass)

(Enamels and enameling)

(MIRA 13:6)

Study
KHODSKIY, L. G., CAND TECH SCI, "INVESTIGATION OF THE
VITREOUS SYSTEM $K_2O-PbO-Al_2O_3-B_2O_3-P_2O_5$ AS ~~THE~~ *enamel* BASES ~~OF~~
~~ENAMELS~~ FOR ALLUMINUM." MINSK, 1961. (BELORUSSIAN POLYTECH
INST . CHAIR OF TECHNOLOGY OF GLASS). (KL-UV, 11-61, 223).

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L 06490-67 EWT(m)/EWP(e) WH
ACC NR: AP6028303

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TITLE: Some properties of glasses based on the systems $BaO-TiO_2-B_2O_3$, $BaO-TiO_2-P_2O_5$,
 $BaO-TiO_2-SiO_2$

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 6, 1966, 1119-1123

TOPIC TAGS: borate glass, phosphate glass, silicate glass, titanium dioxide

ABSTRACT: Glasses of the systems $BaO-TiO_2-B_2O_3$, $BaO-TiO_2-P_2O_5$ and $BaO-TiO_2-SiO_2$ were synthesized from barium carbonate, ammonium monohydrogen phosphate, boric acid, titanium dioxide and quartz sand by melting at 1300-1400°C, and the properties of the glasses were measured on annealed cylindrical specimens. The dependence of the volume electrical resistivity, temperature of the start of softening, chemical stability (to boiling in distilled water), density, and microhardness on the composition was measured, and the crystallizability was determined from tests in a gradient furnace and from thermographic studies. Titanium was shown to decrease the electrical resistivity of the glasses, particularly when it is present in a lower oxidation state. As a rule,

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not more than one compound is formed from the crystallization of the glasses
studied. Silicate glasses, barium silicotitanate $BaO-TiO_2-SiO_2$ crystallizes out.
Low-melting glasses with a high electrical resistivity (10^{14} - 10^{16} ohm cm) were synthesized, and were found to have a satisfactory chemical stability. Orig. art. has:
5 figures and 2 tables.

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Cord 2/2m*E

KHODUKIN, N. I.; KHOZINSKIY, V. I.; GULAMOVA, V. P.

"Experience in making cultures of the measles virus."

Report submitted at the 13th All-Union Congress of Hygienists,
Epidemiologists and Infectionists. 1959